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VIII. *An Account of some Electrical Experiments intended to be communicated to the Royal Society by Mr. Stephen Gray, F. R. S. taken from his Mouth by Cromwell Mortimer, M. D. R. S. Secr. on Feb. 14, 1735-6. being the Day before he died.*

EXPERIMENT I.

TAKE a small Iron Globe of an Inch or Inch and half Diameter, which set on the Middle of a Cake of Rosin of about seven or eight Inches Diameter, having first excited the Cake by gently rubbing it, clapping it three or four times with the Hands, or warming it a little before the Fire; then fasten a light Body, as a small Piece of Cork, or Pith of Elder, to an exceeding fine Thread, five or six Inches long, which hold between your Finger and Thumb, exactly over the Globe, at such an Height, that the Cork, or other light Body, may hang down about the Middle of the Globe: This light Body will of itself begin to move round the Iron Globe, and that constantly from West to East, being the same Direction which the Planets have in their Orbits round the Sun. If the Cake of Rosin be circular, and the Iron Globe placed exactly in the Centre of it, then the light Body will describe an Orbit round the Iron Globe, which will be a Circle; but if the Iron Globe be placed at any Distance from the Centre of the circular Cake, then the light Body will describe an [Elliptical] Orbit, which will

will have the same Excentricity as the Distance of the Globe from the Centre of the Cake.

If the Cake of Rosin be of an Elliptic Form, and the Iron Globe be placed in the Centre of it, the light Body will describe an Elliptical Orbit of the same Excentricity as the Form of the Cake.

If the Iron Globe be placed in or near one of the *Focus*'s of the Elliptic Cake, the light Body will move much swifter in the *Apogee* Part of the Orbit, than in the *Perigee* Part, contrary to what is observed of the Planets.

EXPERIMENT II.

Take the same or such another Iron Globe, and having fasten'd it on an Iron Pedestal about one Inch high, set it on a Table, then set round it a Glass Hoop or Portion of an hollow Glass Cylinder of seven or eight Inches Diameter, and two or three Inches high: This Hoop must be first excited by warming and gently rubbing it, then hold the light Body suspended as in the first Experiment, and it will of itself move round the Iron Globe from West to East in a circular Orbit, if the Hoop be circular and the Globe stand over the Centre of it, but in an Elliptic Orbit with the same Excentricity, if the Globe does not stand in the Centre of the Hoop, as in the first Experiment, when the Globe does not stand on the Centre of the Cake.

[What will happen if the Hoop be Elliptic, he did not mention; I suppose, he had not an oval Glass Hoop by him.]

EXPERIMENT III.

This same Iron Globe being set on the bare Table, without either the Cake of Rosin or Glass Hoop, the

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small

small light Body being suspended as in Experiments I, II. will make Revolutions round it, but slower and nearer to it than when it is placed on a Cake of Rosin, or within a Glafs-hoop.

R E M A R K S.

He had not yet found that these Experiments would succeed, if the Thread, by which the light Body was suspended, was supported by any other Thing than an Human Hand; but he imagin'd it might happen the same, if the Thread should be supported or fasten'd to any animal Substance whatever; and he intended to have tried the Foot of a Chicken, a Piece of raw Flesh, or the like.

He imagin'd to explain the foregoing Particular, by the following odd Phenomenon, of which, he assur'd me, he was very certain, having often observ'd it, *viz.* If a Man resting his Elbows on his Knees, places his Hands at some small Distance from each other, they will gradually accede to each other, without any Will or Intention of the Man to bring them together; and they will again recede of themselves. In the like manner, the Hand will be attracted by the Body; or the Face of a Man, if he stand near a Wall, will be attracted to the Wall, and be again repelled by it.

He told me, he had thought of these Experiments only a very short Time before his falling sick, that he had not yet tried them with variety of Bodies, but that from what he had already seen of them, which struck him with new Surprize every Time he repeated them, he hoped, if God would spare his Life but a little longer, he should, from what these Phenomena point out, bring his Electrical Experiments to the greatest

greatest Perfection; and he did not doubt but in a short Time to be able to astonish the World with a new Sort of *Planetarium* never before thought of, and that from these Experiments might be established a certain Theory for accounting for the Motions of the Grand *Planetarium* of the Universe.

In trying these Experiments since his Death, I have found that the small light Body will make Revolutions round a Body of various Shapes and Substances, as well as round the Iron Globe, if set on the Cake of Rosin; thus I tried with a Globe of black Marble, a Silver Sand-dish, a small Chip-box, and a large Cork. I observed that the Cake, if nothing stood upon it, would in any Part strongly attract the light Body, as held suspended by the Thread; but when the Globe, or other Body, was set upon it, the Edges of the Cake attracted the strongest, and so gradually the Attraction seem'd as it approached the Centre to grow less, till at a certain Distance it was changed into a Repulsion, which proceeded from the Globe, or other Body placed upon the Cake, which very strongly repels the light Body, unless it be held very near it, and then it attracts it strongly. While the light Body is suspended, as in the foregoing Experiments, if you approach the Finger of the other Hand near it, it will fly from the Finger, or be repelled by it with great Vigour.